MATERIALS RESEARCH LABORATORY LTD.

9B Caesar Avenue
Nepean, Ontario
Canada K2G 0A8
Phone (613) 226-7598
226-7699

REQ. NO. 2-9144-8

March 21, 1983

Dr. H.F. Steger
Coordinator, CCRMP
CANMET, Mineral Sciences Laboratories
Dept. of Energy, Mines & Resources
405 Rochester St.
Ottawa, Ont.
K1A 0G1

CONTRACT REPORT NO. OSQ82-00173

Dear Dr. Steger:

Please find enclosed the results of the chemical analyses of the Recommended Reference Uranium Tailings (File no. 15SQ.23440-2-9144) supplied by CANMET as UTS-1 (bottle 816), UTS-2 (bottle 1260), UTS-3 (bottle 422), and UTS-4 (bottle 632).

Although all bottles were marked -100 mesh, we discovered that some of the material contained in these bottles was +100 mesh while a considerable portion (~60%) was +200 mesh. Due to the chemical nature of the materials and their grain size differences, we expected considerable variations in the chemical components of the subsamples or test samples. In some cases we did notice rather large differences, however, quadruplicate analyses helped in smoothing some of the errors.

In general, we followed the methods described in our original proposal for the determination of all the elements, however, we elected to use X-ray Fluorescence techniques for Ba and Ti determination as our atomic absorption unit gave a noise level that we could not accept for the purposes of this project. Uranium was determined by Neutron Activation-DNC techniques.

We hope that you will find the enclosed results satisfactory. Please do not hesitate to call me if you need any additional information. Meanwhile, we have enclosed an invoice for the work performed to date.

Yours sincerely,

MATERIALS RESEARCH LABORATORY LTD.

Sudesh K. Singh, Ph.D.
President

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Encl.

MICROMEDIA
AUG 29 1983

TABLE 1

CHEMICAL ANALYSES OF THE REFERENCE URANIUM TAILINGS

Sample no.	Subsample no.	Constituent								
		Fe(total) (%)	Ti (%)	Al (%)	Ca (%)	Ba (ppm)	U (ppm)	Th (ppm)	S(total) (%)	SO_4^{2-} (%)
UTS-1	1	5.58	0.33	6.34	5.21	485.0	52.3	138.0	0.94	1.71
	2	5.72	0.33	6.43	5.27	483.0	53.6	143.0	0.95	1.68
	3	5.69	0.32	6.23	5.27	488.0	53.9	126.0	0.99	1.67
	4	5.78	0.32	6.26	5.19	490.0	54.6	123.0	1.02	1.66
	5	5.79	0.32	6.35	5.08	491.0	48.0	126.0	1.00	1.69
UTS-2	1	3.65	0.21	2.69	0.45	544.0	57.7	171.0	3.43	0.88
	2	3.56	0.21	2.76	0.45	540.0	55.6	171.0	3.41	0.89
	3	3.60	0.22	2.66	0.47	526.0	59.3	157.0	3.50	0.92
	4	3.49	0.20	2.76	0.47	526.0	56.5	160.0	3.31	0.86
	5	3.57	0.22	2.72	0.46	533.0	58.0	164.0	3.36	0.86
UTS-3	1	3.78	0.23	5.90	4.08	273.0	546.0	9.4	0.22	tr
	2	3.78	0.24	5.88	4.09	279.0	569.0	9.7	0.25	tr
	3	3.77	0.24	5.93	4.02	264.0	548.0	8.4	0.26	tr
	4	3.85	0.24	5.94	4.12	286.0	574.0	9.1	0.26	tr
	5	3.79	0.24	5.98	4.09	280.0	543.0	8.7	0.25	tr
UTS-4	1	3.16	0.29	6.48	1.82	16.0	1047.0	13.3	1.77	3.61
	2	3.14	0.30	6.44	1.84	17.0	1046.0	9.4	1.79	3.60
	3	3.13	0.29	6.41	1.84	15.0	1049.0	13.0	1.79	3.63
	4	3.24	0.30	6.49	1.87	15.0	1049.0	14.7	1.83	3.62
	5	3.16	0.29	6.46	1.83	15.0	1035.0	14.1	1.78	3.63
Sample wt. in grams		1.0	1.0	1.0	1.0	1.0	5.0	5.0	1.0	1.0

TABLE 1

CHEMICAL ANALYSES OF THE REFERENCE URANIUM TAILINGS

Constituent									
Ti (%)	Al (%)	Ca (%)	Ba (ppm)	U (ppm)	Th (ppm)	S(total) (%)	SO_4^{2-} (%)	Ni (%)	As (ppm)
0.33	6.34	5.21	485.0	52.3	138.0	0.94	1.71		
0.33	6.43	5.27	483.0	53.6	143.0	0.95	1.68		
0.32	6.23	5.27	488.0	53.9	126.0	0.99	1.67		
0.32	6.26	5.19	490.0	54.6	123.0	1.02	1.66		
0.32	6.35	5.08	491.0	48.0	126.0	1.00	1.69		
0.21	2.69	0.45	544.0	57.7	171.0	3.43	0.88		
0.21	2.76	0.45	540.0	55.6	171.0	3.41	0.89		
0.22	2.66	0.47	526.0	59.3	157.0	3.50	0.92		
0.20	2.76	0.47	526.0	56.5	160.0	3.31	0.86		
0.22	2.72	0.46	533.0	58.0	164.0	3.36	0.86		
0.23	5.90	4.08	273.0	546.0	9.4	0.22	tr		
0.24	5.88	4.09	279.0	569.0	9.7	0.25	tr		
0.24	5.93	4.02	264.0	548.0	8.4	0.26	tr		
0.24	5.94	4.12	286.0	574.0	9.1	0.26	tr		
0.24	5.98	4.09	280.0	543.0	8.7	0.25	tr		
0.29	6.48	1.82	16.0	1047.0	13.3	1.77	3.61	0.0194	40.0
0.30	6.44	1.84	17.0	1046.0	9.4	1.79	3.60	0.0197	41.0
0.29	6.41	1.84	15.0	1049.0	13.0	1.79	3.63	0.0206	41.0
0.30	6.49	1.87	15.0	1049.0	14.7	1.83	3.62	0.0209	40.0
0.29	6.46	1.83	15.0	1035.0	14.1	1.78	3.63	0.0201	41.0
0.0	1.0	1.0	1.0	5.0	5.0	1.0	1.0	1.0	1.0